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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,072	07/02/2003	Steven D. Goodman	89188.0046	6624

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EXAMINER	
TONGUE, LAKIA J	
ART UNIT	**PAPER NUMBER**
1645	

DATE MAILED: 11/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/614,072	GOODMAN ET AL.	
	Examiner	Art Unit	
	Lakia J Tongue	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 14-20* is/are pending in the application.

4a) Of the above claim(s) *7-13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 14-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

Group I. Claims 1-6 and 14-20, drawn to a composition comprising a Competence Stimulating Peptide (CSP) and sucrose as well as a medicament for the treatment of *S. mutans* to teeth, classified in class 530, subclass 340.

Group II. Claims 7-13, drawn to method of treatment or prophylaxis of a condition associated with the attachment of *S. mutans* to the teeth of a subject, classified in class 424, subclass 9.71.

The inventions are distinct, each from the other because of the following reason: Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process can be used as a response regulator, an assay or it could be used in transfecting a cell with a nucleic acid molecule.

Because these inventions are distinct for the reasons given above, have acquired a separate status in the art as shown by their different classification, their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant is advised that the response to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed.

During a telephone conversation with Olga Berson on 7/23/2004 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-6 and 14-20. The claims are drawn to a composition comprising Competence Stimulating Peptide (CSP) and sucrose as well as a medicament for the treatment of *S. mutans* to teeth. Applicant in replying to this Office action must make affirmation of this election. Claims 7-13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 8/26/2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

Specification

2. The disclosure is objected to because of the following informalities: On page 10 paragraph 5 the word caries is duplicated. In addition, on page 11 paragraph 2 the sentence should read 'The plaque resulting from the attachment of non-pathogenic bacteria is benign and acts as a barrier'.... as opposed to acts a barrier. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-6 and 14-20 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Claims 1-6 and 14-20 claim any equivalent of a Competence Stimulating Peptide (CSP) and sucrose that comprises at least 1 substance from the selected group consisting of an orally acceptable carrier, an anti-caries agent and mixtures thereof.

The instant specification does not teach, nor provide neither guidance, nor evidence original descriptive support for the instantly claimed CSP and sucrose. The specification states that it should be understood that all peptides and proteins having the same or similar function as the CSP peptide encoded by the sequence shown in Fig. 1 (SEQ ID NO: 1) are considered to be functional equivalents of this peptide. The specification teaches SEQ ID NO: 1, but does not teach structure correlated with function.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3 and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ooshima, T. et al (Cariostatic activity of cacao mass extract, Archives of oral biology, Sep 2000, 45 (9) p805-8).

Claims 1-3 and 14-16 are drawn to a composition comprising Competence Stimulating Peptide (CSP) and sucrose. The composition further comprises at least one substance selected from a group consisting of an orally acceptable carrier, an anti-caries agent and mixtures thereof to treat a condition associated with the attachment of *S. mutans* to teeth.

Ooshima et al discloses chocolate that is suspected to contain some caries-inhibitory substances. The cariostatic activity of cacao mass extract (CM), the main component of chocolate, was examined in vitro and in experimental animals. CM showed no detectable effects on the cellular growth and acid production of mutans streptococci. On the other hand, the cell-surface hydrophobicity of mutans streptococci was significantly reduced by the presence of CM. Furthermore, Ooshima discloses that CM inhibited insoluble glucan synthesis by the glucosyltransferases from streptococcus mutans. CM also depressed the sucrose-dependent cell adherence of mutans streptococci. Ooshima et al discloses that CM in both a sucrose diet and drinking water resulted in reductions of caries development and plaque accumulation in rats. The

results indicate that cacao mass extract possesses some anticariogenic potential (p805 and 807).

Claims 14, 15, 19 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Cvitkovitch et al (U.S. Patent Application Publication U.S. 2002/0081302 A1).

Claims 14, 15, 19 and 20 are drawn to a medicament for the treatment or prophylaxis of a condition associated with the attachment of *S. mutans* to teeth, comprising CSP in an amount effective to reduce the attachment of *S. mutans* to teeth. The medicament comprises at least one substance selected from a group consisting of sucrose, an orally acceptable carrier, an anti-caries agent and mixtures thereof.

Cvitkovitch et al discloses an invention that relates to a compound that competitively inhibits binding of CSP to *S. mutans* histidine kinase. The invention treats or prevents dental caries by the addition of compounds that inhibit the stimulatory action of peptides on biofilm formation and acid tolerance of *S. mutans*. This is accomplished by delivery of these compounds to the biofilm and or to incorporate these inhibitors into materials to control growth on surfaces. This includes delivery by topical application, alone or in combination with other compounds including toothpaste, mouthwash, food or food additives (0028). The CSP inhibitors are useful when combined with a carrier in a pharmaceutical composition. The compositions are useful when administered in methods of medical treatments or prophylaxis of a disease, disorder or abnormal physical state caused by *S. mutans* (0078).

Cvitkovitch et al discloses compositions that can be administered to humans or animals by methods such as food, food additives, gels, toothpaste, mouthwash, dental floss or chewing gum in methods of medical treatment. Cvitkovitch et al discloses that dosages to be administered depend on individual patient condition, indication of the drug, physical and chemical stability of the drug, toxicity of the desired effect and the chosen route of administration. The compositions are used to treat disease caused by streptococcal infections such as dental caries and endocarditis (0079).

Cvitkovitch et al discloses compositions that may also contain additives such as antioxidants, buffers, bacteriostatis, bactericidal antibiotics and solutes (0083). Cvitkovitch et al further discloses antibodies directed against the CSP would provide protection against caries (0085). The CSP peptide is also useful as an antigen for the preparation of antibodies that can be used to purify or detect other CSP-like peptides (0093).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-6 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cvitkovitch et al as applied to claims 14, 15, 19 and 20 above, and further in view

of Kuramitsu, H. et al (Immunological relationships between glucosyltransferase from streptococcus mutans serotypes, Infection and Immunity, Sep 1976, 14 (3) p636-44).

Cvitkovitch et al discloses an invention that relates to a compound that competitively inhibits binding of CSP to *S. mutans* histidine kinase. The invention treats or prevents dental caries by the addition of compounds that inhibit the stimulatory action of peptides on biofilm formation and acid tolerance of *S. mutans.* This is accomplished by delivery of these compounds to the biofilm and or to incorporate these inhibitors into materials to control growth on surfaces. This includes delivery by topical application, alone or in combination with other compounds including toothpaste, mouthwash, food or food additives (0028). The CSP inhibitors are useful when combined with a carrier in a pharmaceutical composition. The compositions are useful when administered in methods of medical treatments or prophylaxis of a disease, disorder or abnormal physical state caused by *S. mutans* (0078).

Cvitkovitch et al discloses compositions that can be administered to humans or animals by methods such as food, food additives, gels, toothpaste, mouthwash, dental floss or chewing gum in methods of medical treatment. Cvitkovitch et al discloses that dosages to be administered depend on individual patient condition, indication of the drug, physical and chemical stability of the drug, toxicity of the desired effect and the chosen route of administration. The compositions are used to treat disease caused by streptococcal infections such as dental caries and endocarditis (0079).

Cvitkovitch et al discloses compositions that may also contain additives such as antioxidants, buffers, bacteriostatis, bactericidal antibiotics and solutes (0083).

Cvitkovitch et al further discloses antibodies directed against the CSP would provide protection against caries (0085). The CSP peptide is also useful as an antigen for the preparation of antibodies that can be used to purify or detect other CSP-like peptides (0093). Cvitkovitch et al differ because they do not teach the limitation of sucrose.

Kuramitsu et al teaches partially purified glucosyltransferase enzymes for streptococcus mutans that have been utilized to prepare antibodies directed against the soluble glucan-synthesizing activity, GTF-B, and the insoluble-soluble glucan formation. This antibody fraction inhibited both the cell-associated glucosyltransferase activities as well as the sucrose-mediated adherence of cells to glass strains (p 636).

It would have been *prima facia* obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Cvitkovitch et al that discloses a compound that competitively inhibits binding a CSP to *S. mutans* histidine kinase with the invention of Kuramitsu et al because Kuramitsu et al teach *S.* mutans, inhibition as well as sucrose because both inventions tackle the same issue with the same effective purpose. One of ordinary skill in the art would have been motivated by reasonable expectation of success to combine the invention of Cvitkovitch et al with the invention Kuramitsu et al to obtain the claimed composition because each invention addresses compositions and treatments or prophylaxis to eliminate the attachment of *S. mutans* to teeth. Characteristics such as amount of CSP present would be a matter of optimizing experimental parameters and well within the level of skill in the art.

Since the Office does not have the facilities for examining and comparing applicants' composition with the composition of the prior art, the burden is on applicant

to show a novel or unobvious difference between the claimed product and the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al, 205 USPQ 594.

In re Kerkhoven (205 USPQ 1069, CCPA 1980) summarizes: "It is prima facie obvious to combine two compositions each of which is taught by prior art to be useful for same purpose in order to form third composition that is to be used for very same purpose: idea of combining them flows logically from their having been individually taught in prior art."

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Novak et al, Antibodies and methods of using the same detecting bactericides; incubate modulator with bacteria cell and monitor killing activity of modulator, U.S. Patent 6,331,407 because it defines the state of the art as it relates to histidine kinase.

Novak et al, Antibiotics and methods of using the same peptide can inhibit the growth of a vancomycin tolerant bacterial cell; kills autolysis prone pneumococci without lysing the cell; acts together with penicillin in a synergistic manner to kill bacterial cells, U.S. Patent 6,448,224 because it defines the state of the art as it relates to histidine kinase.

Balganesh et al, U.S. Patent 6,027,906 because it teaches penicillin binding protein derivatives as well as uses.

Georgieva, S. et al, Effect of growth medium composition of glucosyltransferase activity of endomyces fibuliger, Mikrobiologiia (USSR), May-Jun 1976, 45 p429-32.

Kuroda, M. et al, Whole genome sequencing of meticillin-resistant staphylococcus aureus, The Lancet, 357, 9264, 1225, April 2001 because it teaches penicillin-binding proteins that are the enzymes that catalyze cross-bridge formation at the last step of peptidoglyan synthesis

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lakia J Tongue whose telephone number is 571-272-2921. The examiner can normally be reached on Monday-Friday 7-3:30.
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith can be reached on 571-272-0864. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ljt

Patricia A. Duffy

PATRICIA A. DUFFY
PRIMARY EXAMINER